

# Foreword

## How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

## For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado (New Mexico)	2490 West 26th Ave., Denver, CO 80211
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	50 South Virginia Street, Third Floor, Reno, NV 89505
Oregon	1220 Southwest 3rd Ave., 16th Floor, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82602

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Saskatchewan, and N.W.T. — The Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta, T3C 1A6.

# Montana Water Supply Outlook

and

## Federal – State – Private Cooperative Snow Surveys

### **Issued by**

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### **Released by**

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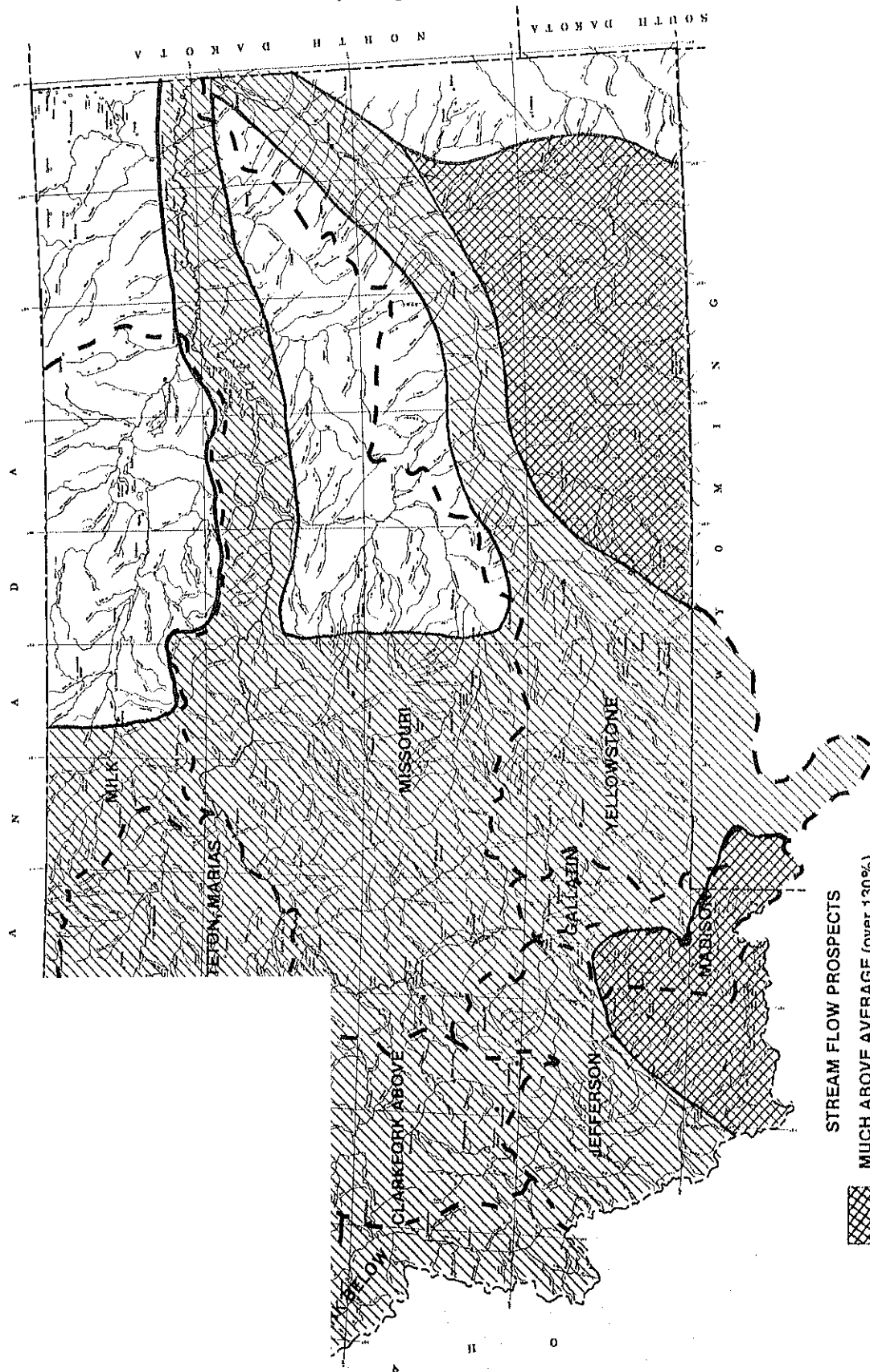
### **Prepared by**

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# STREAMFLOW PROSPECTS FOR MONTANA

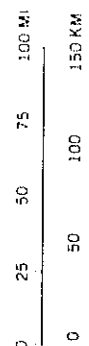
## Spring and Summer Period



### STREAM FLOW PROSPECTS

-  MUCH ABOVE AVERAGE (over 130%)
-  ABOVE AVERAGE (110-130%)
-  NEAR AVERAGE (90-110%)
-  BELOW AVERAGE (70-90%)
-  MUCH BELOW AVERAGE (below 70%)
-  NOT FORECAST

February 1, 1986



SOURCE:  
Information provided  
by SCS Snow Survey  
Personnel

## GENERAL OUTLOOK

### SUMMARY:

Unless weather patterns change to a more favorable moisture flow across Montana, the state could be facing water shortages similar to or even worse than last year. Usually about 60 percent of the season's snowpack is on the ground by February 1. Both December and January are normally good moisture months but this year both have been below average in most areas.

### SNOWPACK:

With the exception of three small areas, the entire state has below average snowpack. In most areas, the water stored in the snow is between 65 and 80 percent of average. There is generally less snow now than there was a year ago. Parts of the Big and Little Belt Mountains near central Montana, the Ruby, Red Rock and Madison River headwaters in southwest Montana, and the Bighorn Mountains in the south central area are the only locations which have received near average snowfall.

### PRECIPITATION:

January mountain precipitation was about average along the Canadian border in northwest Montana. All other areas had below average moisture. The Sun-Teton-Marias area recorded only about 50 percent of average precipitation while the Gallatin recorded 65 percent. All other areas received 75 to 85 percent of average mountain precipitation in January.

#### RESERVOIRS:

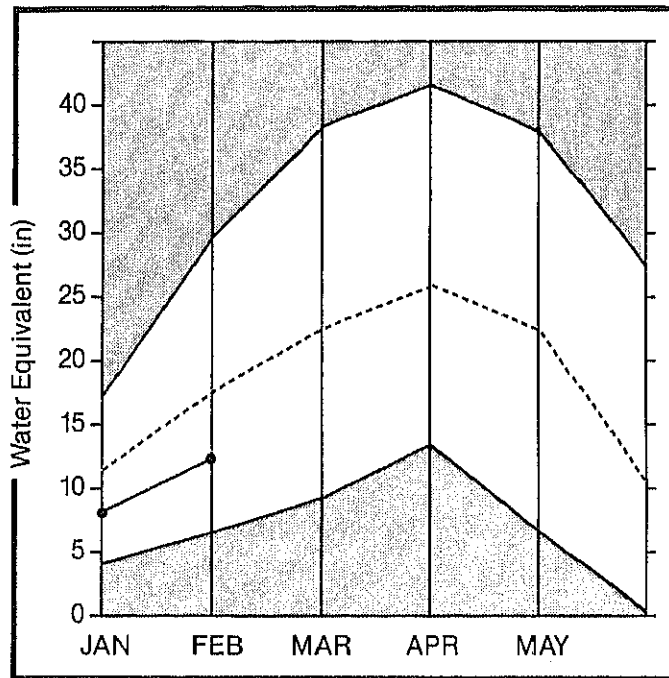
Most irrigation reservoirs have near to a little above average water in storage except in the Milk River system. Fresno and Nelson are below average, but have more stored than at this time last year. Most major multipurpose reservoirs are at about average storage levels. Carryover storage in many reservoirs was good this year due in part to well above average rainfall last August and September.

#### STREAMFLOW:

Spring and summer runoff is expected to be near average on the Beaverhead, Ruby and Madison Rivers in southwest Montana. All other streams are forecast to have flows in the 70 to 90 percent range. These forecasts are based on the assumption that moisture for the rest of the season will be near normal. If the current below average moisture trend continues, these forecasts will be lowered as the season progresses.

# Kootenai Basin

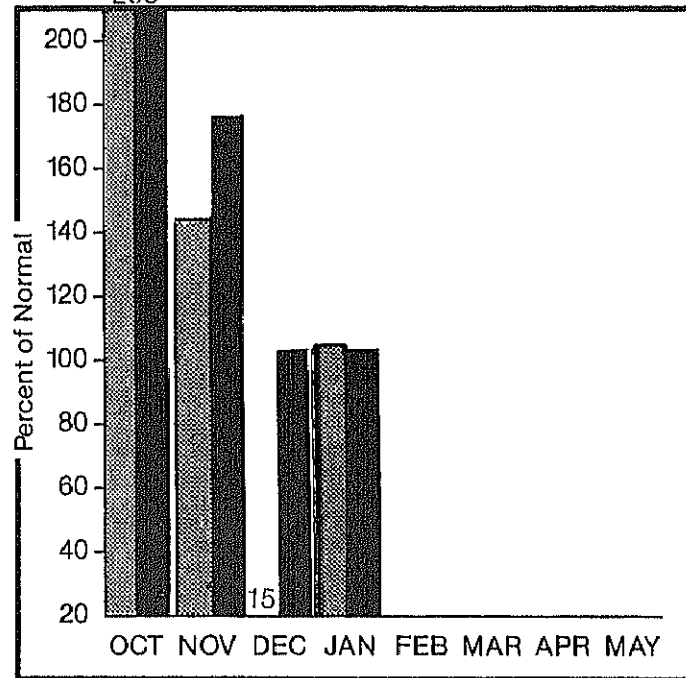
Mountain snowpack\* (inches)



\* Kootenai in Montana



Precipitation\* (percent of normal)



\*Based on selected stations



## WATER SUPPLY OUTLOOK:

Mountain precipitation was near average in January. Present snowpack is about 75 percent of average over the entire drainage, with conditions being a little better in Canada. Streamflow forecasts based on current snow, precipitation and soil moisture are for a little below average flows on the Kootenai with below average runoff coming from tributaries in Montana.

For more information contact your local Soil Conservation Service office.

# KOOTENAI RIVER BASIN in Montana

## STREAMFLOW FORECASTS

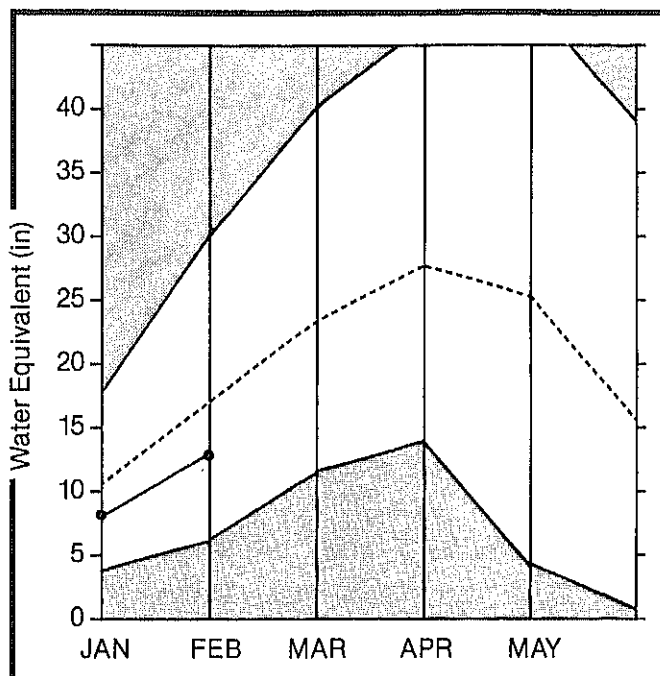
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
KOOTENAI RIVER near Libby *	APR-JUL	6020.0	5420.0	90	113	67				
	APR-SEP	7041.0	6340.0	90	113	67				
FISHER RIVER near Libby	APR-JUL	248.0	217.0	87	115	60				
	APR-SEP	264.0	230.0	87	115	59				
YAKK RIVER near Troy	APR-JUL	500.0	437.0	87	115	59				
	APR-SEP	523.0	462.0	88	116	60				
KOOTENAI RIVER at Leona *	APR-JUL	7498.0	6860.0	91	113	69				
	APR-SEP	8602.0	7870.0	91	113	69				
	APR-JUN	6051.0	5445.0	89	112	68				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	THIS YEAR	LAST YEAR	AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
LAKE KOOCANUSA	5748.0	2138.0	2113.0	2406.0	EAST KOOTENAI in B.C.	24	89	81
					KOOTENAI in MONTANA	19	67	70
					KOOTENAI ab BONNERS FERRY	13	77	75

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

# Flathead Basin

**Mountain snowpack\*** (inches)



\* Flathead

Maximum



Average



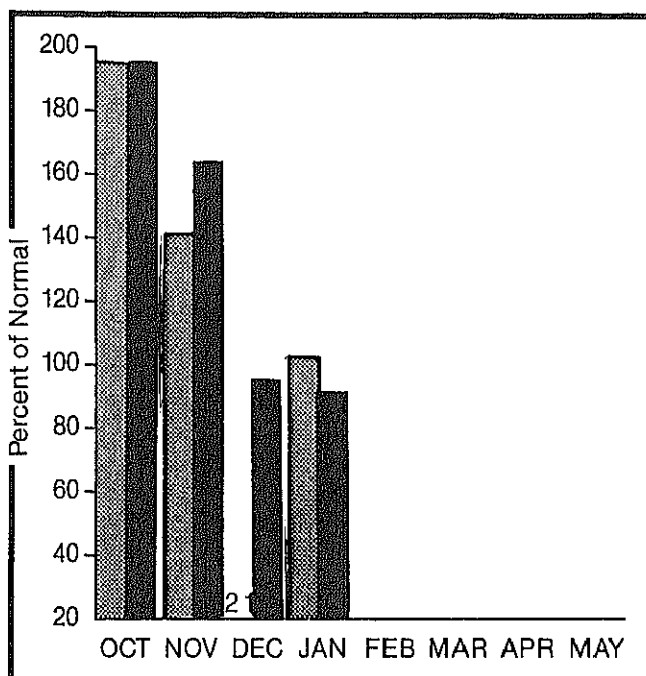
Minimum



Current



**Precipitation\*** (percent of normal)



\*Based on selected stations

Monthly precipitation



Year to date precipitation



## WATER SUPPLY OUTLOOK:

Snowpack conditions continued to deteriorate in January and are now down to about 75 percent of average. Northern drainages have better snow than those in the south. Spring and summer streamflows are forecast to be in the 80 to 85 percent of average range.

For more information contact your local Soil Conservation Service office.



# FLATHEAD RIVER BASIN

## STREAMFLOW FORECASTS

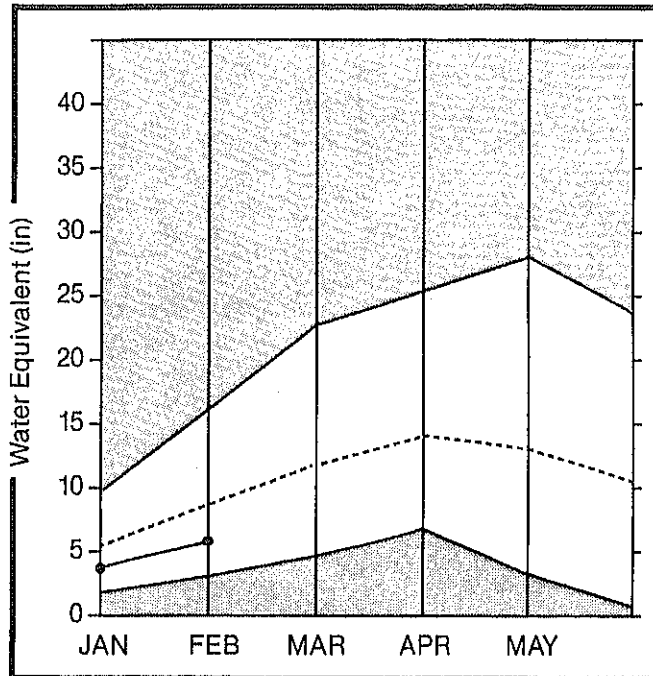
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
NF FLATHEAD near Columbia Falls	APR-JUL	1732.0	1470.0	84	103	67				
	APR-SEP	1913.0	1620.0	84	103	67				
	APR-JUN	1471.0	1260.0	85	104	68				
MF FLATHEAD near West Glacier	APR-JUL	1713.0	1390.0	81	99	63				
	APR-SEP	1869.0	1520.0	81	99	63				
	APR-JUN	1453.0	1210.0	83	101	65				
SF FLATHEAD near Columbia Falls *	APR-JUL	2142.0	1740.0	81	103	59				
	APR-SEP	2278.0	1850.0	81	107	55				
	APR-JUN	1886.0	1550.0	82	108	56				
FLATHEAD at Columbia Falls *	APR-JUL	5721.0	4750.0	83	101	65				
	APR-SEP	6208.0	5150.0	82	101	65				
	APR-JUN	4921.0	4130.0	83	102	66				
SHAN RIVER near Big Fork	APR-JUL	604.0	500.0	82	101	65				
	APR-SEP	689.0	570.0	82	101	65				
FLATHEAD RIVER near Polson *	APR-JUL	6712.0	5570.0	82	101	65				
	APR-SEP	7278.0	6040.0	82	101	65				
	APR-JUN	5759.0	4800.0	83	101	65				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE THIS YEAR	LAST YEAR	** AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR. AVERAGE	
CAMAS (4)	45.2	18.4	17.0	19.2	LITTLE BITTERROOT	5	82	80
MISSION VALLEY (8)	100.0	39.0	34.7	36.5	NORTH FORK FLATHEAD	7	67	70
HUNGRY HORSE	3451.0	2295.0	2308.0	2353.0	MIDDLE FORK FLATHEAD	9	75	75
FLATHEAD LAKE	1791.0	1124.0	835.3	1179.0	SOUTH FORK FLATHEAD	11	68	72
					SHAN	8	71	73
					STILLWATER-WHITEFISH	6	78	73
					FLATHEAD	45	72	74

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

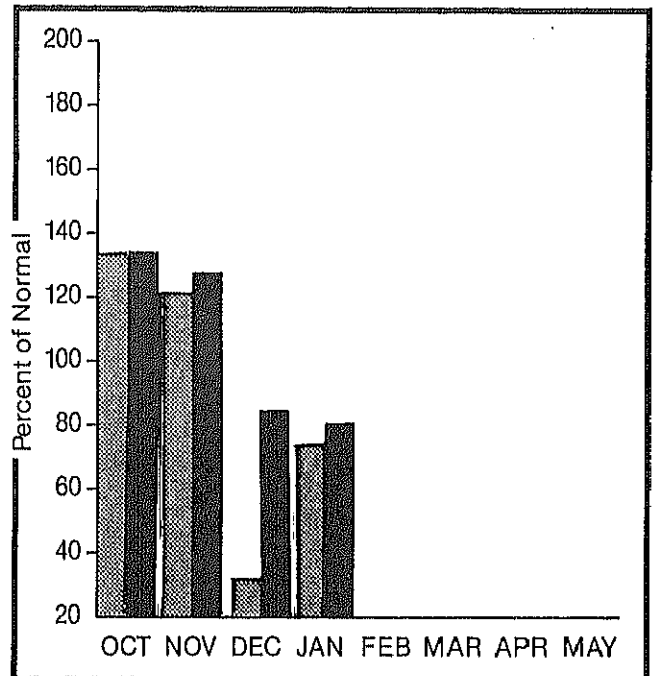
# Clark Fork Basin above Missoula

**Mountain snowpack\* (Inches)**



\* Clark Fork above Missoula

**Precipitation\* (percent of normal)**



\*Based on selected stations

Maximum



Average



Minimum



Current



Monthly precipitation



Year to date precipitation



## WATER SUPPLY OUTLOOK:

January mountain precipitation was about 75 percent of average and snowpack conditions continue to deteriorate. The water stored in the snowpack is now about 65 percent of average. Streamflow forecasts are generally in the 70 to 80 percent of average range.

For more information contact your local Soil Conservation Service office.

**CLARK FORK RIVER BASIN above Missoula**

**STREAMFLOW FORECASTS**

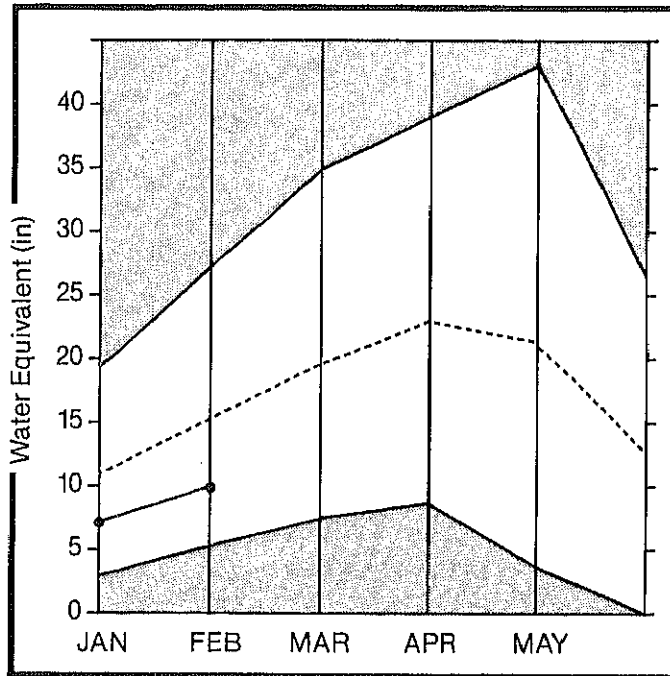
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MOULTON RESERVOIR Inflow (MG)*	APR-JUL	263.0	190.0	72	100	44				
	APR-JUN	237.0	170.0	71	100	44				
WARM SPRINGS CR at Meyers Dam *	APR-JUL	37.8	29.5	78	106	50				
	APR-SEP	46.8	36.6	78	107	49				
FLINT CREEK near Southern Cross *	APR-JUL	15.4	11.4	74	110	39				
	APR-SEP	18.3	13.7	74	115	38				
FLINT CREEK below Boulder Creek *	APR-JUL	59.9	44.8	74	114	37				
	APR-SEP	75.8	57.3	75	113	37				
LOWER HILLOW CR RES Inflow *	APR-JUL	14.9	8.8	59	94	20				
	APR-SEP	15.7	9.6	61	102	25				
H. FK. ROCK CRK near Philipsburg	APR-JUL	70.5	54.7	77	105	50				
	APR-SEP	78.2	60.8	77	106	50				
NEVADA CREEK near Finn	APR-JUL	21.3	15.1	70	108	33				
	APR-SEP	23.0	16.3	70	109	35				
BLACKFOOT RIVER near Bonner	APR-JUL	904.0	685.0	75	94	58				
	APR-SEP	999.0	760.0	76	94	58				
	APR-JUN	782.0	585.0	74	93	57				
CLARK FORK RIVER above Milltown *	APR-JUL	708.0	550.0	77	112	44				
	APR-SEP	816.0	639.0	78	112	44				
	APR-JUN	597.0	466.0	78	116	44				
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1240.0	76	105	49				
	APR-SEP	1815.0	1400.0	77	105	49				
	APR-JUN	1379.0	1050.0	76	104	48				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY 1	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVE.			LAST YR.	AVERAGE
GEORGETOWN LAKE	31.0	24.2	26.6	26.9	CLARK FORK ab BLACKFOOT	31	81	70
LOWER HILLOW CREEK	4.9	1.9	0.3	1.5	BLACKFOOT	17	79	70
NEVADA CREEK	12.6	5.2	4.3	4.4	CLARK FORK above MISSOULA	49	80	69

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

# Clark Fork Basin below Missoula

**Mountain snowpack\* (Inches)**



\* Bitterroot

Maximum



Average



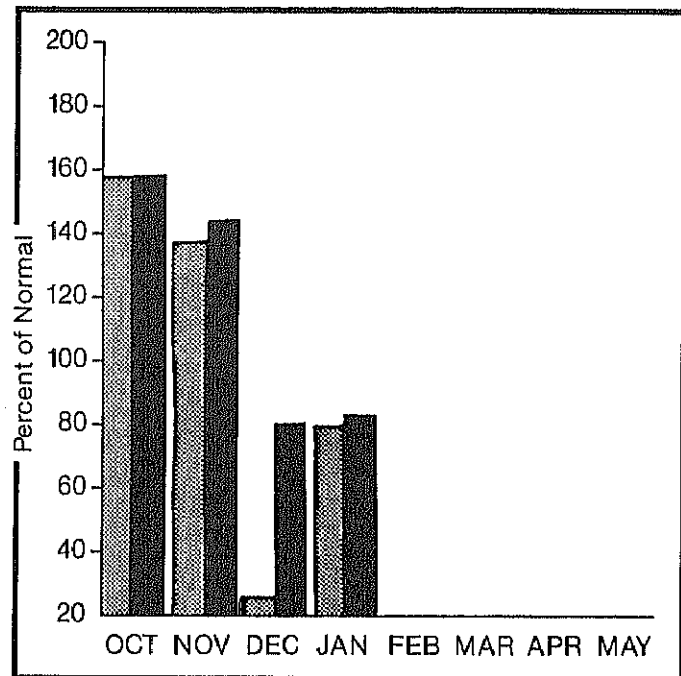
Minimum



Current



**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation



Year to date precipitation



## WATER SUPPLY OUTLOOK:

Snowpack is a little better in the lower Clark Fork drainage than in the Bitterroot. However, snow in both areas is only 65 to 70 percent of average. Mountain precipitation was about 80 percent of average during January, so spring and summer streamflow is expected to be in the 75 to 80 percent range.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

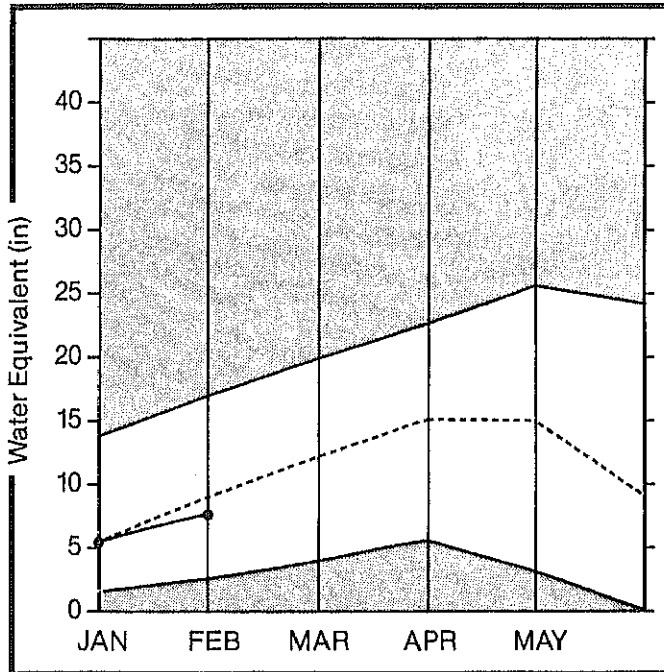
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1240.0	76	105	49				
	APR-SEP	1815.0	1400.0	77	105	49				
	APR-JUN	1379.0	1050.0	76	104	48				
H.F. BITTERROOT RIVER nr Conner x	APR-JUL	164.0	125.0	76	104	48				
	APR-SEP	178.0	135.0	75	104	48				
BITTERROOT RIVER near Darby	APR-JUL	532.0	410.0	77	105	49				
	APR-SEP	580.0	447.0	77	105	49				
	APR-JUN	464.0	365.0	78	107	51				
SKALKAH CREEK near Hamilton	APR-JUL	48.7	40.0	82	101	64				
	APR-SEP	56.0	45.6	81	100	64				
BURNT FORK CR nr Stevensville x	APR-JUL	32.2	26.0	80	109	53				
	APR-SEP	37.4	30.0	80	107	53				
BITTERROOT RIVER at Missoula x	APR-JUL	1384.0	1060.0	76	105	49				
	APR-SEP	1504.0	1150.0	76	104	48				
	APR-JUN	1191.0	930.0	78	106	50				
CLARK FORK RIVER below Missoula	APR-JUL	2996.0	2300.0	76	97	57				
	APR-SEP	3319.0	2550.0	76	97	57				
	APR-JUN	2570.0	1980.0	77	97	57				
CLARK FORK RIVER at St. Regis	APR-JUL	3928.0	3010.0	76	106	48				
	APR-SEP	4411.0	3340.0	75	105	47				
	APR-JUN	3428.0	2605.0	75	105	47				
CLARK FORK RIVER near Plains x	APR-JUL	11071.0	8690.0	78	101	55				
	APR-SEP	12153.0	9540.0	78	101	56				
	APR-JUN	9459.0	7425.0	78	102	55				
THOMPSON RIVER near Thompson Falls	APR-JUL	233.0	185.0	79	106	53				
	APR-SEP	261.0	209.0	80	106	54				
PROSPECT CREEK at Thompson Falls	APR-JUL	132.0	105.0	79	108	52				
	APR-SEP	142.0	112.0	78	107	51				
CLARK FORK at Whitehorse Rapids x	APR-JUL	12351.0	9550.0	77	101	53				
	APR-SEP	13575.0	10500.0	77	101	53				
	APR-JUN	10570.0	8140.0	77	101	53				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVE.			
PAINTED ROCKS LAKE		NO REPORT			CLARK FORK above MISSOULA	49	80 69
NOXON RAPIDS	335.0	158.8	318.0	312.2	BITTERROOT	10	75 65
COMO	34.9	12.7	7.9	10.5	LWR CLARK FK b/w MISSOULA	12	61 68
					CLARK FORK	69	72 68
					FLATHEAD	44	73 74
					PEND O'REILLE	113	72 71



\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.



# Jefferson Basin

**Mountain snowpack\* (inches)**

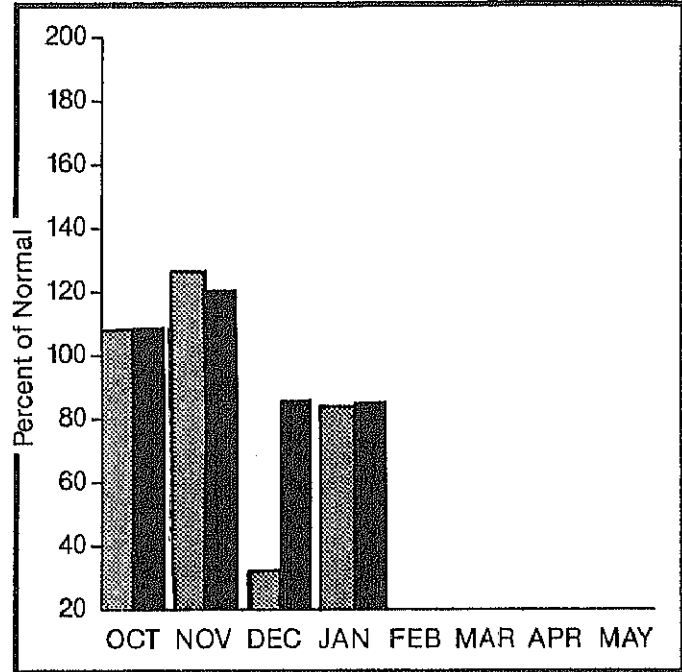


\* Jefferson

Maximum   
Minimum 

Average   
Current 

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation  Year to date precipitation 

## WATER SUPPLY OUTLOOK:

Snowpack varies from a little below average in part of the Ruby River headwaters to well below average over most of the Big Hole and Boulder watersheds. Mountain precipitation during January was about 85 percent of average. Spring and summer streamflows are forecast to be near to a little below average on the Red Rock, Beaverhead and Ruby Rivers and 75 percent of average on the Big Hole.

For more information contact your local Soil Conservation Service office.

# JEFFERSON RIVER BASIN

## STREAMFLOW FORECASTS

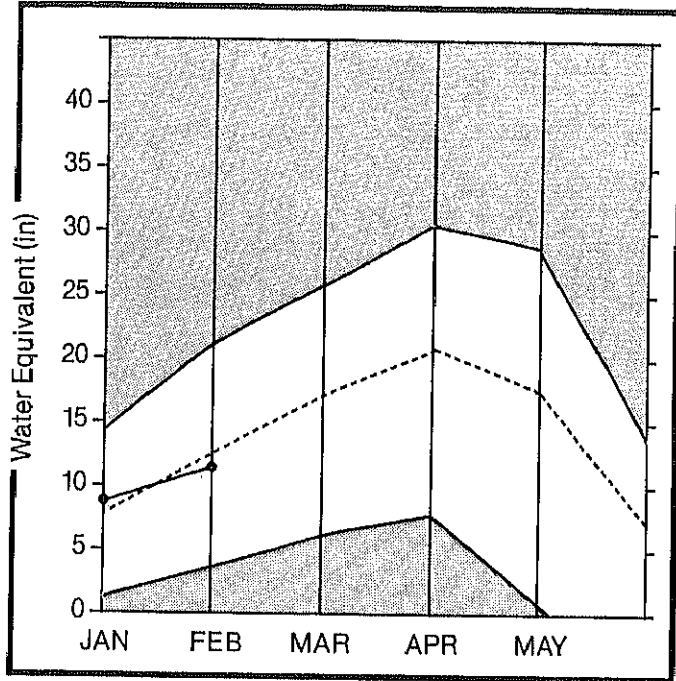
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
RED ROCK RIVER near Monida *	APR-JUL	96.0	93.2	97	133	61				
	APR-SEP	103.0	100.0	97	133	61				
BEAVERHEAD RIVER near Grant *	APR-JUL	137.0	130.0	94	131	59				
	APR-SEP	158.0	147.0	93	129	57				
BEAVERHEAD RIVER at Barratts *	APR-JUL	180.0	167.0	92	129	57				
	APR-SEP	209.0	193.0	92	128	56				
RUBY RIVER near Alder	APR-JUL	85.0	80.0	94	128	60				
	APR-SEP	101.0	94.0	93	127	59				
BIG HOLE RIVER near Melrose	APR-JUL	698.0	526.0	75	107	43				
	APR-SEP	760.0	567.0	74	107	43				
WILLOW CREEK near Harrison	APR-JUL	17.9	14.2	79	117	39				
	APR-SEP	20.0	16.0	80	120	40				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVE.			LAST YR.	AVERAGE
LIMA	84.0	24.5	25.9	34.4	BEAVERHEAD	17	102	91
CLARK CANYON	257.0	137.2	149.2	138.7	RUBY	5	104	91
RUBY RIVER	38.8	26.2	24.1	23.3	BIGHOLE	14	77	70
					BOULDER	13	76	67
					JEFFERSON	49	89	80



\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

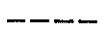
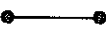
# Madison Basin

Mountain snowpack\* (inches)

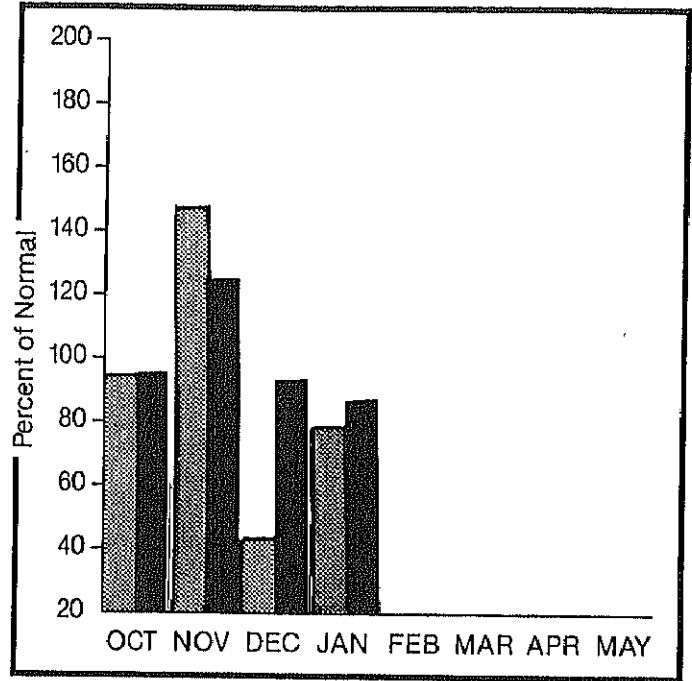


\* Madison


Maximum   
Minimum 


Average   
Current 

Precipitation\* (percent of normal)



\*Based on selected stations

Monthly precipitation 

Year to date precipitation 

## WATER SUPPLY OUTLOOK:

Snowpack is near average in some of the upstream drainages dropping to below average in the lower reaches. Mountain precipitation was about 80 percent of average in January. Streamflows are predicted to be about average in upstream areas dropping to below average in lower tributaries.

For more information contact your local Soil Conservation Service office.



# MADISON RIVER BASIN

## STREAMFLOW FORECASTS

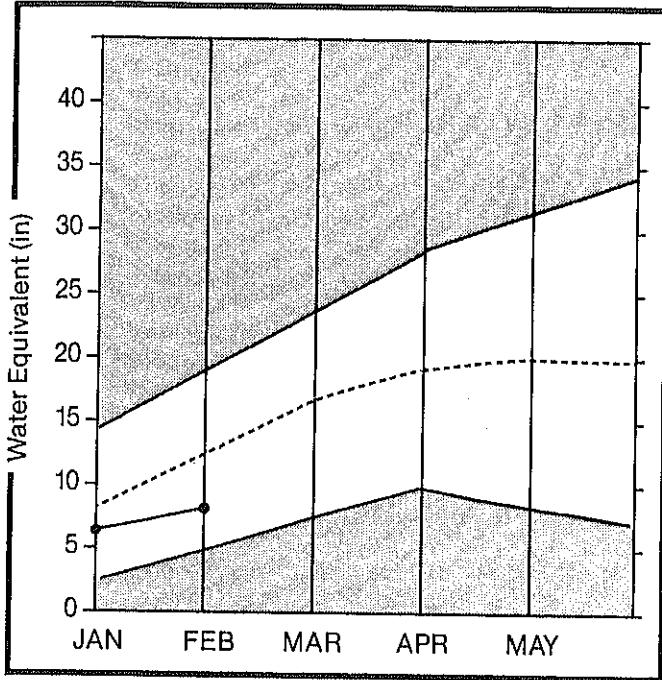
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	HIST PROBABLE (1000AF)	HIST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MADISON RIVER near Cravling *	APR-JUL APR-SEP	388.0 496.0	393.0 498.0	101 100	120 119	82 81				
MADISON RIVER near McAllister *	APR-JUL APR-SEP	672.0 848.0	619.0 770.0	92 90	112 111	72 71				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
ENNIS LAKE	41.0	30.1	31.0	35.6	MADISON above HEBGEN	12	102	90
HEBGEN LAKE	378.0	276.2	310.2	232.6	LOWER MADISON	8	104	90
					MADISON	20	103	90

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

# Gallatin Basin

Mountain snowpack\* (inches)



\* Gallatin

Maximum



Minimum



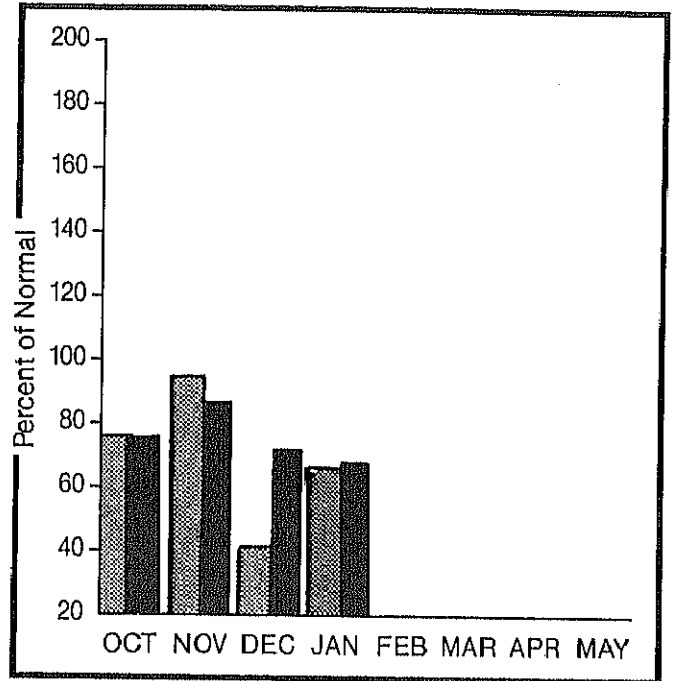
Average



Current



Precipitation\* (percent of normal)



\*Based on selected stations

Monthly precipitation



Year to date precipitation



## WATER SUPPLY OUTLOOK:

Snowpacks vary from below average in the southern watersheds to about 50 percent of average in the Bridger Mountains. Mountain precipitation was about 65 percent of average in January. Spring and summer streamflows are forecast to be 20 to 25 percent below average.

For more information contact your local Soil Conservation Service office.

# GALLATIN RIVER BASIN

## STREAMFLOW FORECASTS

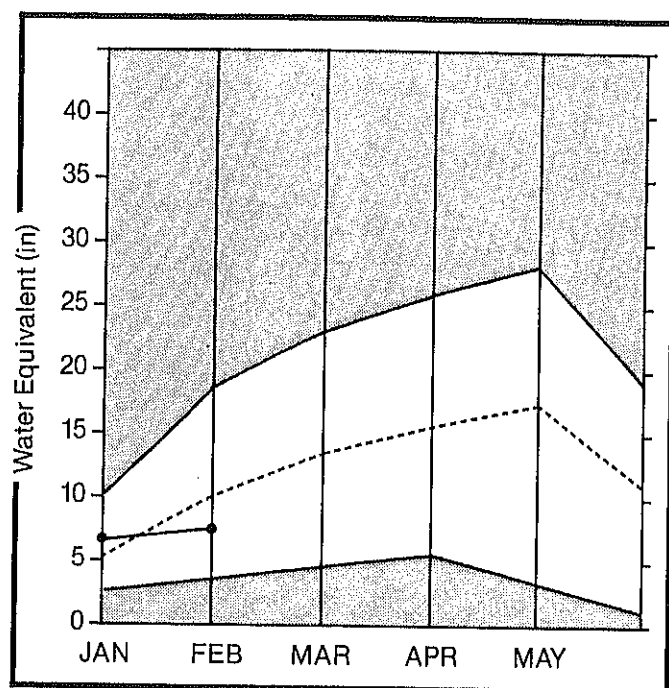
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
GALLATIN RIVER near Gateway	APR-JUL APR-SEP	464.0 545.0	385.0 445.0	82 81	103 102	63 62				
E & W FK. HYALITE CR. nr Bozeman *	APR-JUL APR-SEP	25.0 29.0	20.4 23.5	81 81	100 100	64 62				
HYALITE CREEK near Bozeman *	APR-JUL APR-SEP	39.0 45.0	31.6 36.0	81 80	103 102	59 58				
GALLATIN RIVER at Logan	APR-JUL APR-SEP	523.0 611.0	400.0 470.0	76 76	104 105	49 49				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE THIS YEAR	USEABLE STORAGE LAST YEAR	USEABLE STORAGE AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
MIDDLE CREEK	8.0	6.2	3.8	3.3	UPPER GALLATIN	8	93	75
					EAST GALLATIN	12	82	58
					GALLATIN	20	87	65

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

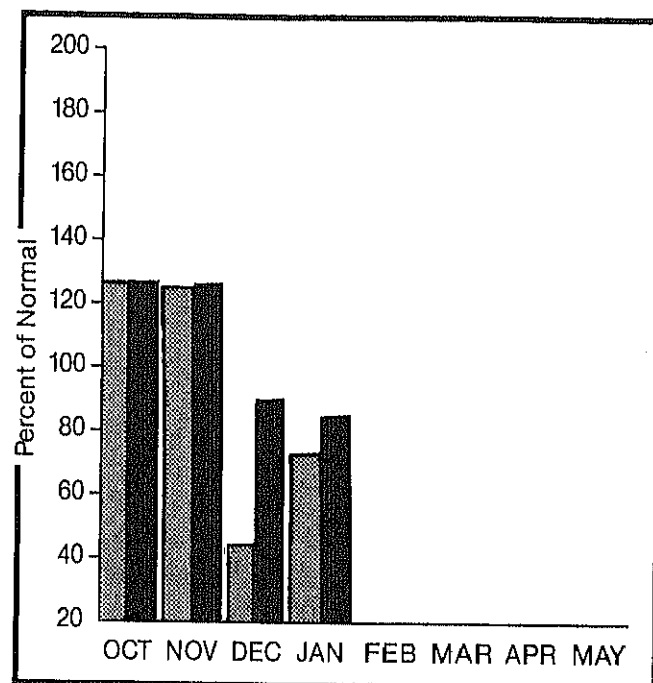
# Missouri Basin

**Mountain snowpack\* (inches)**



\* Missouri Toston to Fort Peck

**Precipitation\* (percent of normal)**



\* Based on selected stations

Maximum Average   
Minimum Current

Monthly precipitation Year to date precipitation

## WATER SUPPLY OUTLOOK:

Snow in the Missouri headwaters is about 75 percent of average. Tributaries on the west side have only slightly better snow cover while east side tributaries are within 10 percent of normal. Mountain precipitation in January was about 75 percent of average. Streamflow forecasts vary from about 80 to 95 percent of average runoff.

For more information contact your local Soil Conservation Service office.

# MISSOURI RIVER BASIN

## STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MISSOURI RIVER at Toston *	APR-JUL APR-SEP	2196.0 2545.0	1760.0 2076.0	80 81	122 122	45 48				
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL APR-SEP	19.0 22.0	18.4 21.2	96 96	137 136	53 55				
BELT CREEK near Monarch	APR-JUL APR-SEP	123.0 134.0	110.0 118.0	89 88	128 126	51 50				
MISSOURI RIVER at Fort Benton *	APR-JUL APR-SEP	3468.0 3980.0	2618.0 3113.0	75 78	125 127	43 46				
MISSOURI RIVER at Virgelle *	APR-JUL APR-SEP	4030.0 4570.0	3018.0 3555.0	74 77	130 132	44 48				
MISSOURI RIVER near Landusky *	APR-JUL APR-SEP	4383.0 4980.0	3328.0 3932.0	75 78	134 135	44 48				
N.F. MUSSELSHELL near Delpine	APR-JUL APR-SEP	5.4 6.4	4.5 5.4	83 84	130 125	37 47				
S.F. MUSSELSHELL above Martinsdale	APR-JUL APR-SEP	59.0 63.0	50.0 54.0	84 85	127 127	42 44				
MISSOURI RIVER below Fort Peck *	APR-JUL APR-SEP	4428.0 4961.0	3321.0 3818.0	75 76	133 136	43 45				
LAKE SAKAKAWEA Inflow *	APR-JUL APR-SEP	12239.0 12775.0	9791.0 10460.0	79 81	130 132	55 58				

## RESERVOIR STORAGE

(1000AF)

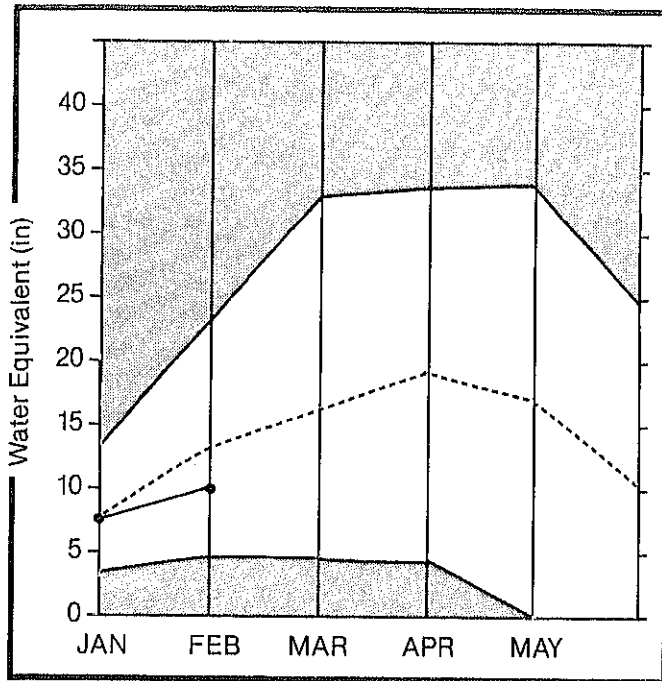
## WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE THIS YEAR	USEABLE STORAGE LAST YEAR	USEABLE STORAGE AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
CANYON FERRY LAKE	2043.0	1503.0	1459.0	1613.0	MISSOURI HEADWATERS	103	91	75
HELENA VALLEY	10.4	4.0	4.6	5.6	WEST SIDE MISSOURI	8	85	77
LAKE HELENA	10.4	10.9	10.9	10.0	SMITH-BELT	5	100	92
HAUSER & HELENA	61.9	63.0	63.2	60.4	JUDITH-MUSSELSHELL	8	92	83
HOLTER LAKE	81.9	80.5	76.3	69.4	MISSOURI MAINSTEM	13	93	84
SMITH RIVER	10.6	4.1	8.8	6.5	TOSTON to FORT PECK	29	85	79
NEMLAN CREEK	12.4	9.7	9.8	9.2	MISSOURI above FORT PECK	112	90	79
BAIR	7.0	1.3	0.4	4.3	MILK HEADWATERS	4	55	61
MARTINSDALE	23.1	4.7	5.8	9.5	MISSOURI in MONTANA	116	88	78
DEADMAN'S BASIN	72.2	26.6	---	43.2	MISSOURI blw YELLOWSTONE	87	119	91
FORT PECK LAKE	18.9	13.8	15.9	15.1				

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

# Sun,Teton and Marias Basins

Mountain snowpack\* (inches)



\* Sun-Teton-Marias

Maximum



Average



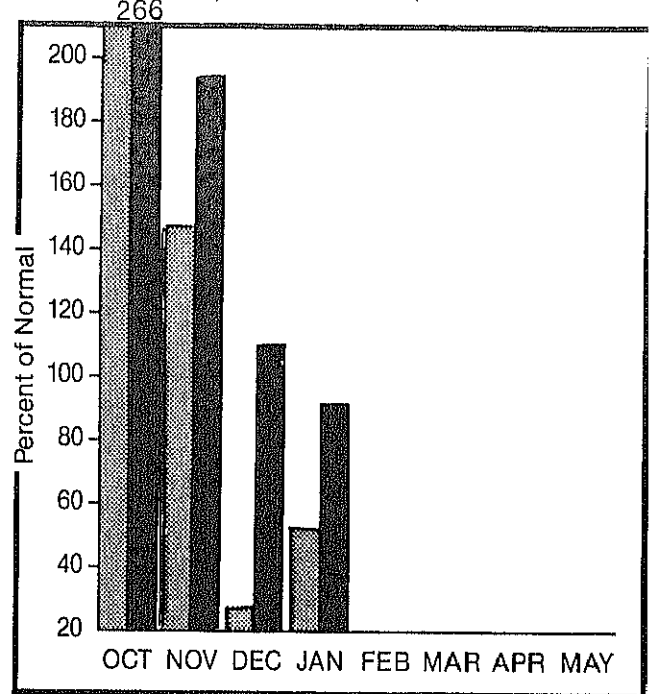
Minimum



Current



Precipitation\* (percent of normal)



\*Based on selected stations

Monthly precipitation



Year to date precipitation



## WATER SUPPLY OUTLOOK:

Snowpack levels are about 70 to 75 percent of average in the headwater areas. Mountain precipitation during January was only about 50 percent of average. Spring and summer streamflows are expected to reach the 75 to 80 percent of average range.

For more information contact your local Soil Conservation Service office.

# SUN-TETON-MARIAS RIVER BASINS

## STREAMFLOW FORECASTS

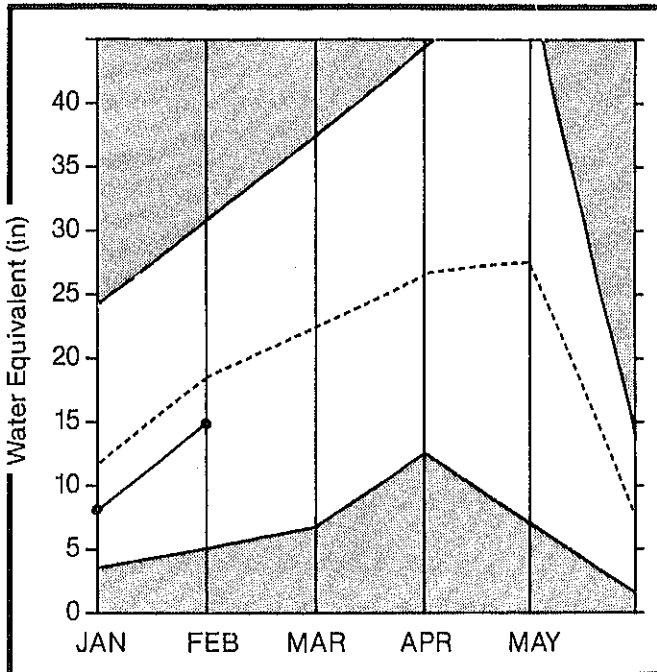
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	HIST PROBABLE (1000AF)	HIST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SUN RIVER at Gibson Dam *	APR-JUL APR-SEP	522.0 570.0	420.0 460.0	80 80	107 107	54 55				
TWO MEDICINE CREEK near Browning *	APR-JUL APR-SEP	235.0 248.0	195.0 206.0	82 83	121 119	45 47				
BADGER CREEK near Browning	APR-JUL APR-SEP	113.0 130.0	92.5 108.0	81 83	119 119	44 47				
SHIFT RESERVOIR Inflow nr Dupuyer	APR-JUL APR-SEP	74.7 86.7	62.0 72.0	82 83	120 119	46 47				
CUT BANK CREEK at Cut Bank	APR-JUL APR-SEP	108.0 114.0	90.0 94.0	83 82	121 118	45 46				
MARIAS RIVER near Shelby	APR-JUL APR-SEP	518.0 542.0	388.0 412.0	74 76	111 112	39 40				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE THIS YEAR	STORAGE LAST YEAR	** AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR. AVERAGE	
GIBSON	99.1	66.0	47.1	40.8	SUN-TETON	3	71	70
PISHKUN	32.0	18.4	18.5	16.5	MARIAS	5	77	75
WILLOW CREEK	32.2	20.4	12.6	20.4	SUN-TETON-MARIAS	8	75	73
LOWER TWO MEDICINE LAKE		NO REPORT						
FOUR HORNS LAKE		NO REPORT						
SHIFT	30.0	21.9	7.9	14.1				
LAKE FRANCES	112.0	62.9	23.8	69.9				
LAKE ELWELL (TIBER)	1347.0	720.0	675.8	545.6				

\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.

# St. Mary and Milk Basins

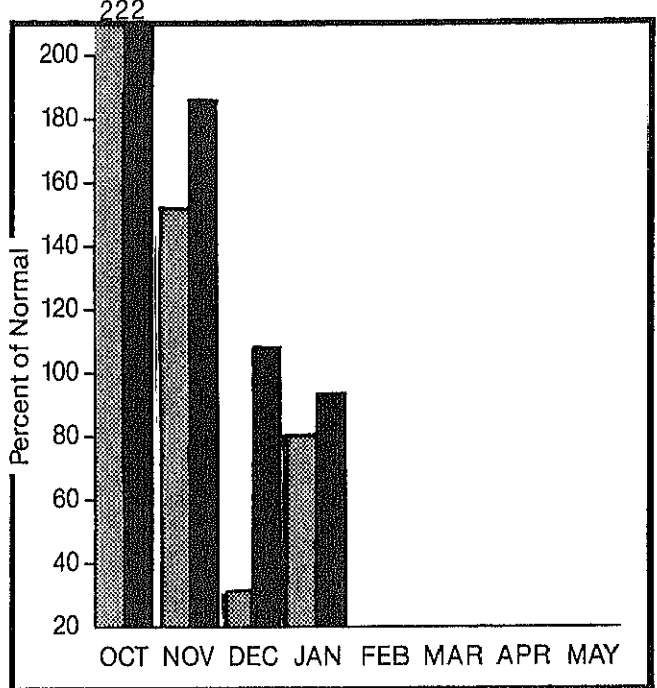
Mountain snowpack\* (inches)



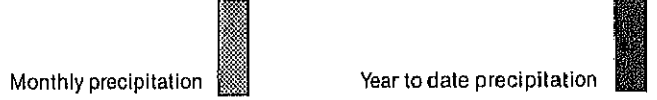
\* St. Mary



Precipitation\* (percent of normal)



\*Based on selected stations



## WATER SUPPLY OUTLOOK:

Snowpack percentages have dropped drastically in the Bear Paws where January precipitation was about 50 to 60 percent of average. Snow cover in the Milk and St. Mary headwaters is about 80 percent of average. Mountain precipitation in the St. Mary headwaters was near average in January. Streamflows are forecast to be about 85 percent of average on the St. Mary and 80 percent of average on the Milk.

For more information contact your local Soil Conservation Service office.



# ST. MARY and MILK RIVER BASINS

## STREAMFLOW FORECASTS

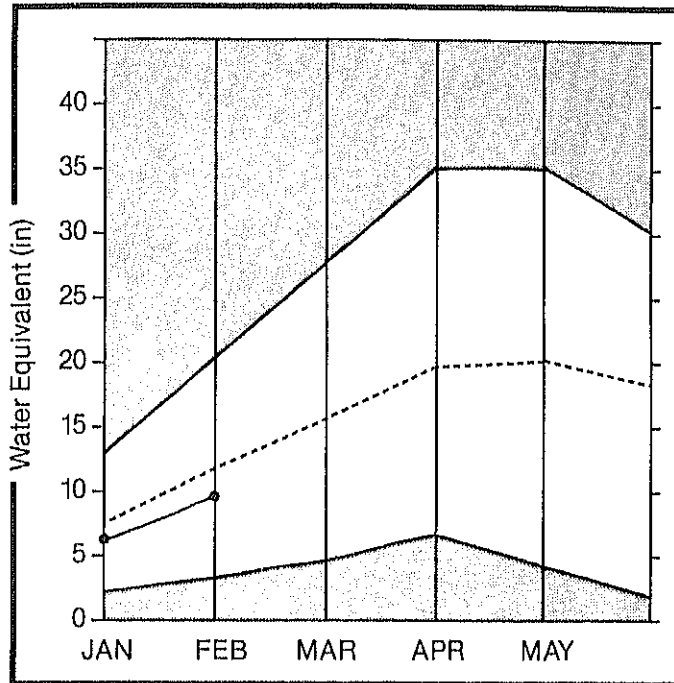
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SHIFTCURRENT CREEK at Sherburne *	APR-JUL	112.0	95.0	84	109	61				
	APR-SEP	128.0	110.0	85	110	62				
ST. MARY RIVER near Eabb *	APR-JUL	416.0	350.0	84	102	66				
	APR-SEP	487.0	410.0	84	102	66				
MILK RIVER at Eastern Crossing *	MAR-SEP	279.0	264.0	94	132	76				
MILK RIVER at Eastern Crossing	MAR-SEP	109.0	87.2	80	117	62				

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE THIS YEAR	USEABLE STORAGE LAST YEAR	USEABLE STORAGE AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AS % OF AVERAGE
LAKE SHERBURNE	64.3	35.3	35.2	19.5	MILK HEADWATERS	4	55	61
FRESNO	127.0	42.7	9.9	58.0	BEAR PANS	6	39	52
BEAVER CREEK	3.5	2.9	0.9	1.7	MILK RIVER	10	51	59
NELSON	66.8	30.0	13.2	40.0	ST. MARY'S	5	65	69
					BOW RIVER	8	124	108
					OLDMAN RIVER in ALBERTA	0	0	0



\*Corrected for upstream diversions or changes in reservoir storage.  
Average is for 1961-80 period.



# Yellowstone Basin

**Mountain snowpack\* (Inches)**

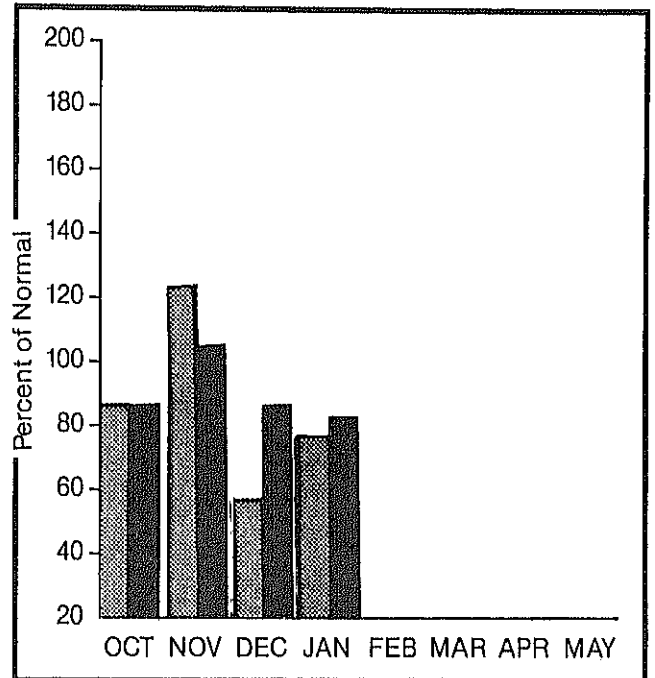


\* Yellowstone above Big Horn



Maximum   
Minimum 

Average   
Current 

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation  Year to date precipitation 

## WATER SUPPLY OUTLOOK:

Snowpack varies from around 60 percent of average in the Shields drainage to near average in the Bighorn, Tongue, and Powder River headwaters. In the Yellowstone headwaters, mountain precipitation was about 75 percent of average during January. Forecasts of spring and summer runoff are from 80 to 90 percent of average on the Yellowstone system and near average on the Bighorn, Tongue and Powder Rivers.

For more information contact your local Soil Conservation Service office.

# YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS										
FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
YELLOWSTONE at Lake Outlet	APR-SEP	826.0	725.0	87	105	71				
YELLOWSTONE at Corwin Springs	APR-JUL	1686.0	1367.0	81	99	63				
	APR-SEP	2027.0	1640.0	80	99	63				
YELLOWSTONE near Livingston	APR-JUL	1969.0	1531.0	77	96	60				
	APR-SEP	2379.0	1852.0	77	96	60				
BOULDER RIVER at Big Timber	APR-JUL	366.0	310.0	84	111	59				
	APR-SEP	398.0	335.0	84	110	58				
STILLWATER RIVER nr Absarokee *	APR-JUL	528.0	454.0	85	120	52				
	APR-SEP	632.0	550.0	87	121	53				
CLARK'S FORK RIVER near Belfry	APR-JUL	563.0	475.0	84	116	52				
	APR-SEP	628.0	534.0	85	117	53				
COONEY RESERVOIR Inflow	APR-JUL	49.5	45.0	90	125	57				
	APR-SEP	60.5	54.0	89	124	55				
YELLOWSTONE RIVER at Billings	APR-JUL	3833.0	3201.0	83	109	65				
	APR-SEP	4516.0	3690.0	81	107	63				
BIGHORN RIVER near St. Xavier *	APR-JUL	1794.0	1794.0	100	128	70				
	APR-SEP	1976.0	2020.0	102	131	72				
LITTLE BIGHORN RIVER near Hardin	APR-JUL	162.0	165.0	102	135	45				
	APR-SEP	182.0	191.0	104	137	48				
TONGUE RIVER near Decker	APR-JUL	244.0	250.0	102	160	37				
	APR-SEP	269.0	269.0	100	158	35				
YELLOWSTONE RIVER at Miles City *	APR-JUL	5906.0	5025.0	85	123	62				
	APR-SEP	6787.0	5987.0	88	125	64				
POUNDER RIVER at Moorehead	APR-JUL	243.0	255.0	105	150	40				
	APR-SEP	263.0	278.0	105	152	40				
YELLOWSTONE RIVER near Sidney *	APR-JUL	6544.0	5628.0	86	125	59				
	APR-SEP	7518.0	6622.0	88	127	61				

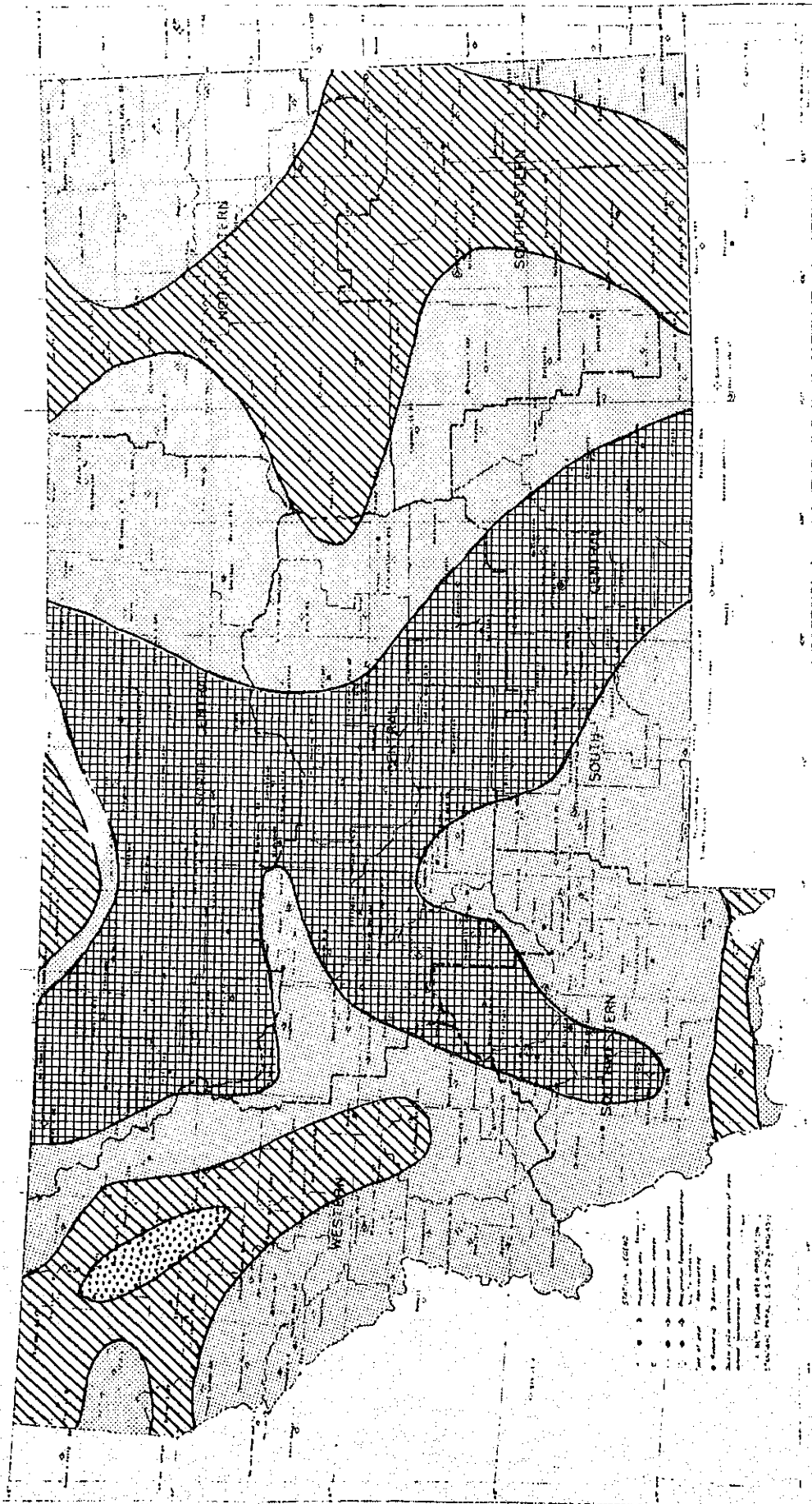
  

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	THIS YEAR	LAST YEAR	AVE.	WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR. AVERAGE	
MYSTIC LAKE	21.0	3.2	2.3	10.3	YELLOWSTONE ab LIVINGSTON	13	105	85
COONEY	27.4	15.8	18.8	14.0	SHIELDS	6	87	58
BIGHORN LAKE	1356.0	731.0	907.4	609.2	BOULDER-STILLWATER	4	113	82
TONGUE RIVER	68.0	12.4	16.6	30.2	CLARK'S FORK-ROCK CREEK	13	123	89
					YELLOWSTONE above BIGHORN	36	109	81
					LITTLE BIGHORN	5	138	106
					BIGHORN (Boysen-Bighorn)	34	132	103
					UPPER TONGUE RIVER	10	120	100
					POUNDER RIVER	29	126	101
					YELLOWSTONE RIVER	81	122	91

\*Corrected for upstream diversions or changes in reservoir storage. Average is for 1961-80 period.



# VALLEY PRECIPITATION



Source: NWS  
Great Falls, MT

JANUARY 1986

Over 120%

80 - 120%

50 - 80%

Under 50%

# The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

## **Canadian**

Department of the Environment  
Atmospheric Environment Service  
Water Management Service  
British Columbia Ministry of Environment  
Inventory and Engineering Branch, Hydrology Section  
Alberta Environment  
Technical Services Division

## **Federal**

U.S. Department of Agriculture  
Forest Service  
U.S. Department of the Army  
Corps of Engineers  
U.S. Department of Commerce  
NOAA, National Weather Service  
National Environmental Satellite Service  
U.S. Department of the Interior  
Bureau of Indian Affairs  
Fish and Wildlife Service  
Geological Survey  
National Park Service  
Bureau of Reclamation  
U.S. Department of Energy  
Bonneville Power Administration

## **State**

Montana Conservation Districts  
Montana Department of Fish, Wildlife, and Parks  
Montana Department of Natural Resources and Conservation  
Montana Department of State Lands  
Montana State University - Agricultural Experiment Station  
University of Montana - School of Forestry

## **Private**

Big Sky of Montana  
Butte Water Company  
Flathead Valley Community College  
Montana Power Company  
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.  
Their cooperation is gratefully acknowledged.